



DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
1455 FRAZEE RD, SUITE 900
SAN DIEGO, CA 92108-4310

M60050_003574
MCAS EL TORO
SSIC NO. 5090.3.A

5090
Ser BPMOW.cpa/0291
28 Mar 2006

VIA CERTIFIED MAIL

Ms. Sue Hakim
Remedial Project Manager
Office of Military Facilities
Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, California 90630

Dear Ms. Hakim:

Pursuant to accomplishing the goals of the Former Marine Corp Air Station El Toro Installation Restoration Program (IRP), we are hereby requesting that the Department of Toxic Substances Control (DTSC), as the lead agency for the State of California, identify potential State chemical-specific, action-specific, and location-specific applicable or relevant and appropriate requirements (ARARs) for a potential response action at IRP Site 1, the Former Explosive Ordnance Disposal (EOD) Training Range. ARARs identified will be considered and evaluated during the preparation of a feasibility study for the site.

In addition, the Department of the Navy (DON) is requesting that the State of California identify any other criteria, advisories, guidance and proposed standards that the State requests to be considered (TBCs) for the above identified site. Please coordinate responses from all California state agencies.

To assist in identification of potential chemical and location-specific ARARs, a summary of the nature and extent of contamination, and physical characteristics of the site is enclosed. Additionally, a list of tentative response action alternatives for IRP Site 1 has been provided in the enclosure to assist in identification of potential action specific ARARs.

The DON is requesting timely identification of potential State ARARs consistent with Section 121 (d)(2)(A) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Contingency Plan (NCP) 40 CFR §300.400(g) and §300.515(d) and (h), and Section 7.6 of the Federal Facility Agreement for the Former MCAS El Toro. Experience to date around the country has shown that failure to identify ARARs with sufficient precision, early in the response selection process, can cause severe disruptions in timely implementation of remedial/removal actions. To ensure timely and complete ARARs identification for the site listed above, please include the following information:

5090

Ser BPMOW.cpa/0291

28 Mar 2006

- a. A specific citation to the statutory or regulatory provision(s) for the potential State ARAR and the date of enactment or promulgation
- b. A brief description of why the potential State ARAR is applicable or relevant and appropriate to the site
- c. A description of how the potential State ARAR would apply to the potential response action, including: specific numeric discharge, effluent, or emission limitations; hazardous substance/constituent action or cleanup levels; and whether the State intends to take the position that the potential State ARAR includes such limitations, levels, etc.
- d. If the State contends a proposed ARAR is more stringent than the corresponding Federal ARAR, please provide the rationale and technical justification for this position
- e. If the State determines that there is not enough information to fully respond to our request, please identify any additional information that would be required to support identification of State ARARs and their application.

We are requesting that you send a response via first class mail addressed to the undersigned and postmarked within thirty (30) calendar days of receipt of this request. Please direct any technical questions to Ms. Content Arnold at (619) 532-0790 and any legal questions to Mr. Rex Callaway, Associate Counsel, at (619) 532-0988.

Sincerely,



DARREN NEWTON
BRAC Environmental Coordinator
By direction of the Director

Enclosure: 1. Site Summary and Response Action Alternatives, IRP Site 1, Former Marine Corps Air Station El Toro, California

Copy to:

Mr. Richard Muza
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Mr. John Broderick
California Regional Quality Control Board
Santa Anna Region
3737 Main Street, Suite 500
Riverside, CA 92501-3339

Installation Restoration Program Site 1 Summary

Former Marine Corps Air Station El Toro, Irvine, California

Background

Installation Restoration Program (IRP) Site 1 is located in the northeast portion of Former Marine Corps Air Station (MCAS) El Toro in the foothills of the Santa Ana Mountains. IRP Site 1 is situated within a tributary canyon of Borrego Canyon Wash at elevations ranging from approximately 610 to 760 feet above mean sea level (MSL). IRP Site 1 includes the Northern explosive ordnance disposal (EOD) Training Range (16.9 acres) and the Southern EOD Training Range (16.6 acres), and surrounding areas (see Figure 1).

Site History and Previous Investigations

Training for EOD and detonation of munitions was conducted at IRP Site 1 from 1952 to 1999. Military ordnance used during these activities included hand grenades, land mines, cluster bombs, smoke bombs, and rocket warheads. Additionally, there have been reports of burning 2,000 gallons of sulfur trioxide chlorosulfonic acid (FS smoke) in trenches in the northern portion of the site. During disposal from 1952 to 1993, it has been estimated that approximately 300,000 gallons of petroleum fuels were burned at IRP Site 1. Such activities have a potential to contaminate the soil with munitions and explosives of concern (MEC), munitions debris (MD), explosives residues, perchlorate, fuel hydrocarbons, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and dioxins/furans. Various investigations have been conducted at IRP Site 1, with each investigation targeted toward specific environmental media or contaminant, to adequately define the nature and extent of contamination at the site. Based on their scopes, the investigations performed at IRP Site 1 can be divided into the following categories:

- Geophysical surveys
- MEC investigations
- Soil and groundwater sampling and analyses
- Surface water and sediment sampling and analyses
- Evaluation of perchlorate distribution in groundwater
- Radiological investigations

Physical Characteristics of IRP Site 1

IRP Site 1 is located in the northeast portion of Former MCAS El Toro.

Subsurface lithology of IRP Site 1 consists of poorly consolidated and weathered exposures of the Capistrano Formation, which is overlain in the southern portion of the site by Holocene-aged alluvium. A project trace of an unnamed fault passing beneath the alluvium is present near the southern Site 1 boundary (see Figure 2).

Although groundwater beneath IRP Site 1 is not currently used for beneficial uses, it has the potential beneficial uses of municipal water supply, agricultural and industrial

supplies, and industrial process supply according to the Santa Ana Region Basin Plan. Based on the groundwater elevation data collected as a part of Phase II Remedial Investigation (RI), the depth to groundwater at IRP Site 1 ranges from approximately 19 to 110 feet. The groundwater gradient at Site 1 is generally towards south-southwest with an average gradient of 0.05 foot per foot.

The habitat assessment conducted at IRP Site 1 in December 2000 suggested that the dominant vegetation types at the site consist of non-native grassland coastal sage scrub (CSS), and toyon-sumac chaparral. The wildlife documented at IRP Site 1 includes 1 reptile, 36 amphibians, and 6 mammalian species. The sensitive ecological resources at IRP Site 1 include CSS, which is considered a sensitive vegetation type by several resource agencies. Additionally, special status species (those listed by the state and federal agencies as endangered, threatened, rare, or of special concern) have been documented at IRP Site 1. These species include Riverside fairy shrimp (*Streptocephalus wootoni*) (federally endangered), coastal California gnatcatcher (*Poliophtila California californica*) (federally threatened), cactus wren (*Campylorhynchus brunneicapillus*) (federally regionally sensitive), non-vocalizing grasshopper sparrow (*Ammodramus savannarum*), and the southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) (federally regionally sensitive). The habitat for the Riverside fairy shrimp, the coastal California gnatcatcher, and the cactus wren is outside of the soil contamination area, which is primarily in the central portion of the Northern EOD Training Range (Figure 2).

Nature and Extent of Constituents of Potential Concern

The environmental investigations conducted at IRP Site 1 delineated the nature and extent of constituents of potential concern (COPCs) for different environmental media potentially impacted by the historical activities at the site, namely soil, groundwater, sediments, and surface water.

Nature and Extent of MEC. Four safe-to-move MEC items and approximately 5,000 pounds of MD were recovered during the MEC field investigations at IRP Site 1. While the MEC was recovered in the Northern EOD Training Range, the MD was recovered in all the remaining portions of the site investigated, including Southern EOD Training Range, area surrounding the Northern and Southern EOD Training Ranges, and the Range perimeter. The maximum depth of MEC was 8 feet bgs.

Nature and Extent of Soil COPCs. Low concentrations of VOCs, SVOCs, explosives residues (4-amino-2,6-dinitrotoluene, 2-amino-4,6-dinitrotoluene, 2,4,6-trinitrotoluene, and cyclotrimethylenetrinitramine [RDX]), hydrocarbons (total petroleum hydrocarbons as motor oil, diesel and gasoline) and perchlorate are present in the soil at IRP Site 1. Most chemicals are below the Environmental Protection Agency (EPA) Region IX residential and/or industrial preliminary remediation goals (PRGs). Most of the exceedances are restricted to the shallow soil (less than 5 feet bgs), with the exception of one location, where low concentrations of the COPCs were present to a depth of 35 feet bgs. The exceedances above EPA Region IX residential and/or industrial PRGs for organic COPCs (naphthalene and RDX) and metals were observed primarily in the

central portion of IRP Site 1 in the Northern EOD Training Range. This may be because most of the recent EOD activities at IRP Site 1 occurred in the Northern EOD Training Range.

Nature and Extent of Groundwater COPCs. Low concentrations of VOCs, SVOCs and petroleum hydrocarbons are present in IRP Site 1 groundwater. The only significant COPC in the IRP Site 1 groundwater is perchlorate. The highest concentrations of perchlorate exceeding its current EPA Region IX tap water PRG by over one order of magnitude are present in the groundwater in the central portion of IRP Site 1. In addition, relatively high concentrations of perchlorate are present in groundwater south of IRP Site 1 and in groundwater between IRP Site 1 and IRP Site 2, particularly along the ephemeral stream (see Figure 2).

Nature and Extent of Sediment COPCs. The chemicals detected in the sediment samples collected in the ephemeral pond in the northern portion of IRP Site 1 included toluene, petroleum hydrocarbons, and metals. No SVOCs, explosives residues, or perchlorate were detected in any sediment sample. Toluene was detected at low concentrations, below residential PRGs, at two sampling locations. Petroleum hydrocarbons detected in the sediment samples included low concentrations of motor oil hydrocarbons, TPH as diesel fuel (below 1,000 mg/kg), and TPH as gasoline (below 100 mg/kg). All metals concentrations in sediment were below EPA Region 9 residential PRGs, with the exception of arsenic; however, all arsenic concentrations were below the established MCAS El Toro arsenic background value.

Nature and Extent of Surface Water COPCs. Low concentrations of acetone, RDX, motor oil hydrocarbons, TPH as diesel fuel, and TPH as gasoline were detected in the surface water samples collected from the pond in the northern portion of IRP Site 1 and ephemeral stream in the southern portion of the site. Only arsenic and RDX exceeded their respective tap water PRG.

Potential Response Action at IRP Site 1

Based on the evaluation of data including human health, ecological and explosive safety risk evaluations, the Phase II RI concluded that no response action is required for sediments and surface water.

In January 2006, the Environmental Protection Agency (EPA) established an official reference dose (RfD) of 0.0007 mg/kg/day of perchlorate. This translates to a Drinking Water Equivalent Level (DWEL) of 24.5 micrograms per liter (µg/L) (EPA 2006). Since perchlorate concentrations at Site 1 exceed 24.5 µg/L (as summarized in the Draft Site 1 RI Report (Earth Tech 2005) and no Maximum Contaminant Level (MCL) has been promulgated, a risk-based cleanup goal will be developed by the DON for perchlorate in Site 1 groundwater. A list of tentative response action alternatives that DON is considering for remediation of perchlorate in groundwater is provided below. Further refinement of the scope and evaluation of alternatives would be addressed in the FS.

1. No action
2. Institutional controls and access restrictions
3. Monitored natural attenuation and institutional controls
4. Containment with hydraulic control using extraction and injection wells
5. Containment using a permeable reactive barrier employing physical chemical or biological treatment
6. Groundwater extraction with above-ground treatment and percolation of treated groundwater. The following technologies would be evaluated for above-ground treatment:
 - a. Ion exchange resin
 - b. Granular activated carbon
 - c. Biological reactor
 - d. Chemical reduction using agents such as zero-valent iron and titanium
 - e. Electrochemical reduction
 - f. Capacitive deionization
 - g. Reverse osmosis
 - h. Electrodialysis
 - i. Nanofiltration/Ultrafiltration
7. Groundwater extraction with above-ground treatment and reinjection of treated water into the aquifer. The above ground treatment options are same as those described for tentative response action alternative #6.
8. In-situ bioremediation using subsurface injection of an electron donor. The following configurations would be evaluated:
 - a. Direct injection
 - b. Recirculation loop consisting of groundwater extraction, amendment with nutrients or electron donor, and reinjection into the aquifer.

In addition to groundwater, there is a potential for a risk-based cleanup of soil at IRP Site 1. The DON is in the process of transferring the IRP Site 1 property to the Federal Aviation Administration (FAA), for like use as an EOD training range. Thus, a soil response action is unlikely. However, DON may evaluate the following tentative response action alternatives for the cleanup of soil at the site:

1. No action
2. Institutional controls and access restrictions
3. Capping plus institutional controls and access restrictions
4. Excavation and screening of MEC/MD, and disposal of MEC/MD at an approved disposal facility
5. Excavation and off-site disposal of soil
6. Excavation, on-site treatment and off-site disposal. The following technologies would be evaluated for onsite treatment:
 - a. Soil washing
 - b. Incineration
 - c. Bioremediation
 - d. Thermal desorption

References

Earth Tech, Inc. 2005. *Draft Phase II Remedial Investigation Report, Installation Restoration Program Site 1, Explosive Ordnance Disposal Range, Former Marine Corps Air Station, El Toro, California.* June.

United States Environmental Protection Agency (EPA). 2006. *Assessment Guidance for Perchlorate.* Letter from Susan Parker Bodine, Assistant Administrator, to all Regional Administrators. January 26.

11/11/11 11:11 AM 11/11/11 11:11 AM 11/11/11 11:11 AM 11/11/11 11:11 AM 11/11/11 11:11 AM 11/11/11 11:11 AM 11/11/11 11:11 AM 11/11/11 11:11 AM 11/11/11 11:11 AM 11/11/11 11:11 AM

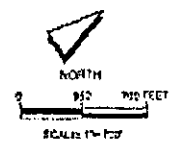


LEGEND:

- ACAS EL TOND BOUNDARY
- ECO RANGE BOUNDARY
- THE SITE BOUNDARY (1, 2, AND 17)
- STREAM OR WASH (INTERPOLATED FROM TOPOGRAPHIC DATA)
- GEOLOGIC FAULT, DOTTED WHERE INFERRED
- EXISTING FENCE

DESCRIPTION OF MAP UNITS:

- Qd1 Flood Plain and Stream Channels (Quaternary Deposits)
- Qd2 Broadwash Deposits (Quaternary Deposits)
- Qd3 Trail Ridge Scrub (Quaternary)
- Tn Micaal Formation
- Tco Oak Mountain
- Td1 Mesozoic Formation (Quaternary)
- Td2 Tertiary Formation (Quaternary)
- Td3 Range and Low Range Formations



Site Plan		
W. P. & S. E. O. Range		
Date: 03-08	Former MCAS El Toro	
Project No. 36097	EarthTech <small>Environmental Solutions Group</small>	
		Figure 2